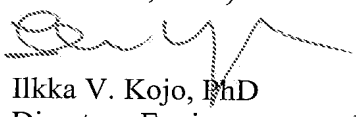
Expert declaration

DE19720420 Process for obtaining metal from metal oxide vs. 20041001WO Supply system for suspension smelting furnace

Smelting is a form of extractive metallurgy. Its main use is to produce molten metal or metal containing intermediate product from its **ore or concentrate**. In suspension smelting like flash smelting the heat needed to melt the feed material is generated mainly by the reactions of metal concentrate with oxygen contained in the normally oxygen enriched air fed together with the concentrate. The oxygen reaction with at least part of the sulphur contained in concentrate and the reaction of oxygen with at least part of the iron contained in the concentrate are exothermic and the heat generated in those reactions is enough to smelt the products i.e. normally copper matte and oxide slag.

In the process described by Okamoto the reactions of the raw material are reduction reactions and endothermic by nature. Thus it is essential to use high temperature flame burner, which is using some fossil fuel, like coal to generate the heat and which at the same time acts as a source of reduction agent. The raw material is reduced in reducing atmosphere and melted by the heat generated by the flame in the high temperature burner. These are essential differences between suspension smelting and the process described in Okamoto's patent.

This type of suspension smelting has been well known in the literature and was patented already in 1948 (Bryk, P., Ryselin, J., "Menettelytapa sulfidipitoisen raaka-aineen sulattamiseksi". Finnish Patent No. 22694, 1948).



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More than 25 year experience in research and technology development in both high temperature metallurgy as well as hydrometallurgy.